2. These conditions are: (*a*) Acute infectious diseases, especially typhoid; (*b*) chronic infections associated with marked toxemia, especially tuberculosis of the lungs in the third stage; (*c*) uremia shortly before and during the acute uremic seizure; (*d*) epilepsy immediately after the convulsion; (*e*) intoxication from certain drugs, *e. g.*, hyoscine, ether, and chloroform; (*f*) excessive fatigue; (*g*) exceptional cases of certain neuroses, viz., neurasthenia, hysteria, paralysis agitans; (*h*) psychoses in the stage of excitement; (*i*) chronic articular rheumatism.

3. With the exception of joint disease, a toxic action on the nervous system may be assumed in all these states as the underlying factor in the production of clonus. This is obvious in the case of the infectious diseases and drug intoxications; in uremia, epilepsy, and undue fatigue the presence of toxic products of metabolism may be regarded as probable, though not yet demonstrated, and even in hysteria and neurasthenia the action of toxic products in severe cases cannot be excluded.

4. In the case of articular rheumatism a constant spinal irritation from the inflamed joint tissues is the probable cause.

5. In two autopsies on cases of phthisis, with clonus, no changes were found in the central nervous system. In the writer's case, however, inflammatory exudate was demonstrated about the posterior median artery in the posterior septum of the bulb.

6. Clonus due to toxic states usually may be distinguished from that of organic nervous disease by the absence of spasticity and of other signs pointing to organic disease, and particularly by the absence of the Babinski and Oppenheim toe signs.

7. An exception to the above rule is encountered after the use of hyoscine in medicinal doses and immediately after the epileptic attack, in both of which instances the Babinski and Oppenheim signs may be positive.

8. The occurrence of ankle-clonus is of prognostic value in uremia, preceding at times the acute seizure. Ankle-clonus usually disappears a few days before death, otherwise its disappearance usually indicates an improvement in the patient's condition.

THE RATIONAL TREATMENT OF SURGICAL OR NON-PULMONARY TUBERCULOSIS.

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I do not intend this article to be an argument against the proper use of surgery in surgical tuberculosis. I shall endeavor to show, however, that in the majority of cases of non-pulmonary tuberculosis surgical interference is but an incident in a course of treatment the most important part of which comes before and after the operation. In other words, in practically no case of surgical tuberculosis can the operator, no matter how skilful, remove all traces of tuberculosis; in tuberculous cervical adenitis, for instance, it is not uncommon to meet patients with large disfiguring scars in the neck and with a history of recurrence of the glands soon after the operation. These patients are recorded on the hospital records as "discharged cured." Only too often subsequent events demonstrate the fallacy of this statement.

During the past three or four years the attitude of many surgeons has undergone a radical change as to the treatment of surgical tuberculosis. While there still remain certain cases in which extensive surgical procedures are indicated, such as in renal tuberculosis, surgeons are coming to realize more and more that their duty to the patient does not end with the completion of the operation and the discharge of the patient from the hospital; they are recognizing the fact that only by constant careful supervision for many months afterward can a permanent cure be obtained. Further than this they are learning that equally careful and constant supervision prior to any surgical procedure will vastly increase the benefits of any operation and in many cases do away with the need of it altogether. This paper is a description of the practical application of these principles as carried out in my clinic at the Massachusetts General Hospital.

In July, 1905, Dr. Joseph H. Pratt, of Boston, started the first "tuberculosis class" in this country. This class consisted of a selected group of consumptive patients who were taught by means of weekly meetings and home supervision how to carry on what was known as "home sanatorium treatment." At the start I became deeply interested in this movement, and soon formed such a class among my own patients. As time went on the number of beds for indigent consumptives in Massachusetts greatly increased, and thus the sphere of usefulness for tuberculosis classes became more and more limited until at the present time in this State one can assign to the tuberculosis class only a small part in the campaign against pulmonary tuberculosis.

This is not the case with surgical tuberculosis, however. There are few beds for children and practically no beds for adults in sanatoria or hospitals in this State where patients with non-pulmonary surgical tuberculosis can receive adequate outdoor hygienic sanatorium treatment of which they are so badly in need. The reasons for this are obvious in that surgical tuberculosis is rarely a danger to the community which has its hands full in caring for its dangerous and infectious cases of consumption. These reasons, though perfectly adequate, render the case of the patient so unfortunate as to have tuberculosis of glands, kidney, etc., instead of his lungs a very deplorable one. It became increasingly evident to me that while the usefulness of the home sanatorium movement must become less and less as far as consumption of the lungs was concerned, in surgical tuberculosis it was and will continue to be a potent agent for good.

The hospital authorities have seen fit to call this department which I have built up and devoted to the care of surgical tuberculosis a "tuberculin clinic." This is a misleading name. It is true that with the great majority of my patients I use tuberculin in conjunction with other measures, but in only a few cases would I be willing to attribute to tuberculin all or nearly all of the improvement which has usually taken place. In a certain class of patients with tuberculosis of the genito-urinary tract it has seemed to me that tuberculin is the most important factor in treatment; in the great majority of cases, however, it is undoubtedly a factor, but by no means the most important factor in producing good results. From the start I have confined myself to the use of a bouillon filtrate tuberculin kindly supplied me by Dr. E. R. Baldwin, of the Saranac Lake Laboratory. Other investigators have advocated the bacillary emulsion and certain other preparations, notably bovine tuberculin. My results with the B. F. preparation have been so satisfactory that I see no reason for a change.

Tuberculin is administered once a week according to the well-known rules laid down by Trudeau. The initial dose is 0.0001 to 0.0005 mg., rarely 0.001 mg. This is gradually increased up to 50 to 100 mg. Increase of dosage is gauged by careful observation of clinical signs of a reaction—local, focal, or constitutional. A few patients take their pulse and temperature regularly at home; in the majority of instances this is unnecessary. Constitutional reactions have been exceedingly rare, and in no case has the slightest harm resulted from such occasional reactions while in not a few instances marked improvement seems to have followed a mild constitutional disturbance. It has been my aim to avoid all constitutional reaction by repeating the same dose or decreasing it. I have found it possible to carry most of my patients up to large amounts of tuberculin without the slightest discomfort or disability.

The clinic is held once a week at the out-patient department of the Massachusetts General Hospital; the hospital provides me with a room, necessary equipment, and a nurse. Patients are referred to me from the other out-patient departments, particularly the male and female surgical and genito-urinary departments. Upon the arrival of any new patient, after a physical examination to rule out any pulmonary condition, a card is filled out recording temperature, pulse, and weight. The methods of treatment and reasons for everything that is asked are explained in detail; the patient is then sent to the Social Service Department (without which or its equivalent no such clinic could exist) with the request:

"Please investigate and report to me as to home conditions." This is followed by a personal interview with the social worker taking up the case, in which the exact needs of this individual patient are explained. The chief of the department from whom the patient was referred is also seen and his ideas obtained as to treatment of the local condition. In every case of tuberculous adenitis the patient is sent to the dental department for thorough cleaning of the teeth and to the throat department for tonsillectomy or other procedure if this is deemed advisable. All this takes time. It is often one or two weeks before all these important details can be attended to. At the outset every effort is made to secure the patient's coöperation and to see that he or she understands the reason for everything.

Patients begin to arrive shortly before 9 A.M. Men, women, and children are seen together in one large room. Each patient, on arrival, is given a numbered slip; temperature, pulse, and weight are recorded on the history cards, which are arranged in order at the table where I see the patients. One after another as I call out their names the patients come and talk over with me the details of the past week. If the week has been an uneventful one, and the patient has had no signs of a reaction, constitutional or local, the interview is short; on the other hand, if the patient is not doing well, has lost weight, or is not following out directions it may take some time. Most of the patients I know well and call by their first names; they come to know each other and to enjoy the weekly meetings. I often call the attention of the entire group to striking points coming up in the course of my conversation with individual patients. Frequent consultations are held with the physicians and surgeons of other departments who are looking after the local conditions. The lungs are carefully watched, and whenever the slightest suspicion of pulmonary involvement is found radical treatment usually in a sanatorium is instituted.

WORK VS. REST. Many of these patients keep at their regular work during the entire course of active treatment. While it is advisable and necessary in the majority of instances that all work or school be given up at least for the first two or three months, in not a small number the general condition has been such that it has seemed a useless hardship to impose enforced idleness.

OUTDOOR SLEEPING. During the summer months many patients sleep outdoors; a few sleep out all the year round. The question of fresh air at night is carefully gone into in every case; and in many instances patients are allowed to go to school or to work on condition that they get a sufficient amount of fresh air at night.

LENGTH OF STAY IN THE CLINIC. Patients are urged to attend regularly once a week until the process is cured or arrested. This cannot be done in every case, and, as a general rule, a compromise has to be made. As the local process and general condition improve patients are frequently allowed to come once in two weeks instead of every week. When the disease is apparently arrested they report once a month or once in two months until a permanent cure is assured.

CLASS OF CASES. The greater number of patients in this clinic are those with tuberculous cervical adenitis; in addition to this there are many cases of genito-urinary tuberculosis, tuberculosis of epididymis, prostate, bladder, tubes, ureter, or kidneys. Other less common cases are those with bone or joint disease, lupus, ocular, and mesenteric gland tuberculosis.

DIET AND DRUGS. If the patient is under weight one quart of milk a day in addition to the usual three meals is prescribed; occasionally olive oil in tablespoonful doses after meals is ordered. Unless the patients are distinctly in need of more nourishment nothing extra in the way of food is ordered, providing that it is definitely ascertained that three really good meals a day are assured. Drugs are rarely if ever used.

STATISTICS AND RESULTS. Since the time that this clinic has been devoted purely to extrapulmonary tuberculosis I have had 209 patients under treatment and observation. Of these 209 patients 50 are in regular attendance every week or every other week, and are therefore not included; 43 patients for one reason or another remained under treatment too short a time to allow of their being considered in this series. The chief causes of this too short a stay at the clinic were:

(*a*) The presence of pulmonary tuberculosis which necessitated removal to a sanatorium as soon as possible.

(*b*) The patient's home was too far away to allow of regular attendance.

(*c*) The home and financial situation were such that the patient was either unwilling or unable to attend regularly.

This leaves 116 patients of whom I can speak with considerable certainty as to results. Each of these has been under more or less constant supervision, coming to report once a month or once in two or three months; the minimum period since attending regularly has been six months; in a large proportion of cases it has been two to four years since they were regular members of this department. These cases are divided as follows:

Tuberculous adenitis	60
Ocular tuberculosis	28
Tuberculosis of kidney	8
Tuberculosis of epididymis	5
Tuberculous tenosynovitis	3
Bone tuberculosis	3
Lupus	3
Mesenteric gland tuberculosis	2
Tuberculous peritonitis	1
Tuberculous salpingitis	1
Tuberculous prostate	1
Tuberculous fistula in ano	1
	116

I have used the terms adopted by the National Tuberculosis Association to denote results. This omits the term "apparently cured" substituting the more conservative one "disease arrested." Of the 60 cases of tuberculous adenitis, which includes young and old patients, those with merely one small broken-down gland and those with extensive bilateral processes on which many operations had previously been performed with no permanent benefit, 46 have had the disease arrested and are now well and heatlhy in every way, 13 have been markedly improved, while in only 2 instances has the disease progressed despite treatment. There have been no deaths. Of the 28 patients with ocular tuberculosis in some form 9 have had the disease arrested, 17 have been markedly improved, while in 2 cases the process has advanced. Of the 28 remaining cases, which include various other forms of non-pulmonary tuberculosis, 14 have had their disease arrested, 12 have improved, while in 2 the disease has progressed.

These results are by no means startling, although on the whole they are eminently satisfactory when one considers (1) the absolute lack of sanatorium facilities, (2) the comparative lack of adequate home supervision, and (3) the financial condition of most of these patients, which makes it necessary for by far the greater number of the adults to get to work much sooner than would have been the case under ideal conditions.

As stated in the beginning of this paper, I do not attribute to tuberculin alone all or nearly all of whatever improvement has been brought about. It is a judicious combination of proper hygiene, conservative surgery, and tuberculin backed up by individualization in each case and the employment of applied commonsense that has helped these patients in the past and that will help similar patients in the future.

MYOCARDIAL HYDROTHORAX, WITH REPORTS OF CASES.[1]

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A collection of transuded serum in the pleural cavities is a secondary condition, most commonly associated with either cardiac or renal dropsy or the severe anemias, for example, leukemia and progressive pernicious anemia. Not infrequently, hydrothorax also supervenes in chronic dysentery, chronic diarrhea, carcinoma, syphilis, and scurvy. In all of the chronic diseases mentioned

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[1] Read before a stated meeting of the College of Physicians of Philadelphia, February 5, 1913.